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The future of French museums in 2030

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ABSTRACT

The purpose of this article is to describe the possible futures of French museums up to 2030. To do this we rely on a Delphi study that took place between late 2017 and early 2018 with 99 experts from the field. We propose three scenarios. The first aims to create museums centered around youth and to democratize culture. The second corresponds to the reaction of museums facing a decrease in public funding. The third is a breakdown scenario, where museums undergo evolutions. In this latter scenario, a direct participation of nearby stakeholders is observed, unlike the other two scenarios.

1. Introduction

In Europe, the tertiarization of the economy has led to a sharp increase in the size of certain sectors such as health, education, and culture (Peyrard-Moulard and Pauget, 2013). According to Shubik (1994), culture has received broad state and private support, which can be explained by various factors, ranging from the international prestige linked to the construction of large buildings such as museums, the desire to preserve and enhance heritage, and the possibility of educating through culture; or even its potential to generate value in economic terms (Falk and Sheppard, 2006; Regourd, 2012; Labadi, 2016). Picard (2018) notes that this sector represents 88 billion € in annual turnover, not including tourism benefits. A study by the French Ministry of Culture shows that France invests 2.6% of its GDP on average in culture compared to 2.3% across other countries,[1] thus contributing to strengthening its influence. A report commissioned by the French Ministry of Culture in 2011 highlights that France is one of the world leaders in the sector (4th in the art market, 3rd in cinema, renowned monuments, and festivals of international reputation).

Museums are undeniably important in cultural terms – symbolically, objectively, and subjectively (Origet du Cluzeau, Tobelem, 2009; Berneman, Meyronin, 2010). The focus herein is on France, which is known for its actions in favor of the international influence of culture, and is clearly a key player in the museum system. Indeed, France is home to three of the ten most visited art museums in the world, the Louvre Museum being the most visited in the world, with about 10 million visitors per year (source: The Louvre Museum).

According to official data from the Ministry of Culture (2017), the number of visitors to museums in France rose from just over 40 million in 2005 to 62 million in 2017. However, attendance has stagnated since 2010 and is concentrated around museums whose attendance exceeds 100,000 visitors per year (which represent only a fraction among the 1,200 accredited French museums), and even more so towards the largest establishments (*e.g.*, the Louvre Museum, Le château de Versailles, and le musée d'Orsay), whose attendance is mainly linked to international tourism. Smaller museums (which accommodate less than 20,000 visitors a year) are facing economic pressures with a decline in attendance for several consecutive years and the fact that public funding is stagnating or declining (Benhamou, 2012); not to mention the impact of the Covid-19 crisis.

At the same time, the commercial potential of museums is asserting itself with the opening of subsidiaries abroad for the largest museums such as the Louvre in Abu Dhabi and the Pompidou Center's partnerships in Malaga, Spain and Brussels, Belgium (Tobelem, 2017b; Peyre, 2018). However, this does not compensate for the need for investment to renovate or expand existing museums.

The emergence of new technologies and new IT players such as Google (which offers virtual visits of more than 150 museums) and the introduction of robots in museums, providing security and/or information services, raises questions about the way these organizations are evolving.

Thus, the museum industry is affected by major upheavals of all kinds, which give rise to uncertainties leading to multiple possible futures (Jouvenel, 1964). In this context, we interviewed experts to

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[1] https://books.openedition.org/deps/454?lang=fr

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determine how they imagine the future of museums in 2030. This time horizon was considered because it is far enough away to take into account disruptions – especially economic, technological, and societal – but close enough to allow experts to project themselves beyond the current period.

Studies carried out by professional museum organizations exist in the USA,[2] the United Kingdom,[3] the Netherlands,[4] and Switzerland.[5] However, very little has hitherto been said about France, apart from an official report dating from 2017, that tended to focus on existing developments rather than reflecting on the foreseeable future of French museums (Eidelman, 2017). Our contribution is therefore to offer a foresight study on this sector in France. In methodological terms, Delphi is operationalized to build a consensus based on expert opinions (Hsu and Stanford, 2017). This method is widely used in foresight contexts (Breiner et al., 1994). Specifically, we relied on a two-round Delphi study with 99 French-speaking experts. We interviewed experts from the major museums (*e.g.*, the Louvre Museum, the Pompidou Center, the Musée d'Orsay, the Picasso Museum, and the château de Versailles) whilst also ensuring that smaller museums and establishments located outside Paris and the major provincial cities were duly accounted for in the sample of respondents. This led us to formulate three scenarios for 2030. The first is centered on youth and the democratization of culture. The second questions the economic future of museums. Finally, the third is a scenario of breakdown, where museums undergo evolutions in progress. In this latter scenario, it includes the direct participation of museums' stakeholders, unlike the other two scenarios.

The remainder of the paper is structured as follows. A literature review is offered in Section 2, before methodological details are delineated in Section 3. The results of the Delphi exercise are then outlined and discussed in Section 4. Finally, conclusions are put forward in Section 5.

2. Literature review

2.1. Characteristics of the museum sector

A rich literature has developed since the 1980s on the management and the development of museums (Rentschler, Hede, 2007; Kotler et al., 2008; Anderson, 2012; Sandell, Janes, 2013). This literature is mainly confined to books on planning and development strategies, trying to propose a very practical approach through checklists and best practices (Ambrose, Runyard, 1991; Fopp, 1997). They introduce the thinking of New Public Management by explaining the methods and precepts of strategy, planning, marketing, organizing, quality management, and human resources management (Jeffri, 1983; Garfield, Hesselbein, 1992; Byrnes, 1993; Chong, 2002; Sandell, Janes, 2007). One of the objectives is to broaden audiences through better knowledge of constituencies and develop new resources through marketing tools: targeting, positioning, product enhancement, pricing policy, promotion, and communication. Branding issues have also become an important focus of research (Scott, 2000; Twitchell, 2004; Wallace, 2006).

The managerial literature proposes ways to optimize the functioning of sales spaces, with emphasis on dynamic management of the product offerings, their renewal, and the quality of welcome (Theobald, 2000; Mottner, 2007; Mottner and Ford, 2005; Buber, Knassmüller, 2009; Gautier, 2014). The rise of the commercial dimension in museums inspires many reflections on its compatibility with their educational mission. The question is whether the search for a certain form of financial profitability is likely to undermine museums' scientific, cultural, educational, and social missions (Zolberg, 1984; Anheier, Toepler, 1998; Shubik, 1999).

Awareness of the role played by major museums in the development of tourism is not new, but the increasing integration of museums into national and international tourist itineraries is now the subject of much writing (Capstick, 1985; Van Den Berg et al., 1994; Wireman, 1997; Origet du Cluzeau, Tobelem, 2009; Richards and Munsters, 2007). The managerial challenges for museums are threefold: to assess the impact of tourism on the functioning and policy of establishments; to address the various needs of different types of visitors, in particular according to their country of origin and cultural/educational background; finally, to optimize the contribution of tourism by establishing partnerships with tourism professionals and by engaging in a proactive policy of promotion towards national and international audiences. This is driven by the number of tourists worldwide: the World Trade Organization (WTO) predicted that there will be 1.8 billion tourists in 2030 compared to 1 billion in 2012, before the Covid-19 crisis.

Beyond these considerations related to the integration of museums in their territories, the use of technology raises important debates (Freeman et al., 2016). The arrival of major players such as Google has not radically changed visitors' practices, but there is a growing reflection in the public sector (Pauget and Dammak, 2019) and the museums on technologies: from the 3D printer to create derivative products in near-real time, to connected objects, and the development of virtual communities on the Internet to develop an emotional link with museums (Trendswatch, 2012-2018)

2.2. The relations between museums and the creative industries

We observe a broadening of the traditional concept of cultural industries (recorded music, cinema, press, audiovisual, Internet) to the notion of creative industries, which also includes economic activities with a "creative" component (with or without copyright attached), such as fashion, architecture, design, tourism, video games… (Webber, 1993; Florida, 2002). Since Fritz Machlup, authors have highlighted the economic contribution of the cultural sector (Machlup, 1966), which is, even more, the case with the rise of the cultural and creative industries. Thus, many governments now rely on the growing economic importance of music, audiovisual, electronic games, fashion… (Caves, 2000; Cunningham, 2004; Flew, 2011). The arts, culture, and creative sector represent today a source of innovation (Bae and Yoo, 2015; Kyung Sung, 2015), thus accounting for a growing share of production and exports in many countries. Art museums contribute to the development of cultural and creative industries, as the latter are partly rooted in the mastery of forms, values, signs and symbols created by the cultural sector in general, and museums in particular, be it design, architecture, fashion, luxury goods, arts and crafts, tourism, video games, advertising (Davies and Sigthorsson, 2013; Hartley et al., 2015).

The museum industry is generally included in the field of creative industries according to Unesco. However, it has a fundamental characteristic: museums are considered as non-profit organizations. This is the case for the 1,200 accredited museums in France. In other words, museums rely on public funding and/or donation to survive (Busson and Evrard, 2013). Thus, earned revenues and the marketplace are not sufficient to support museums, as opposed to the bulk of cultural and creative industries.

2.3. The evolution of French museums

France is a major player in the field of museums. It has three museums among the world's top 10 art museums in terms of attendance (the Louvre Museum, the Pompidou Center, and the Musée d'Orsay); and four if we add the château de Versailles, which can also be considered as a museum (and which welcomes around 7 million visitors per

[2] Trendswatch. Center for the future of museums (Trendswatch, 2012).

[3] Museums 2020, Discussion-paper. (UK) Museums Association, 2012.

[4] Agenda 2026. Study on the Future of the Dutch Museum Sector. Netherlands Museums Association, 2016.

[5] What museums do we want tomorrow? The choice is ours. Reflection points of the Association of Swiss Museums, 2016.

year). Museums are perceived as economic attractors and are considered to be able to promote local economic development (*Ministry of Culture Report*, 2014).

There are three important characteristics of French museums. The first is a stagnation in total attendance since 2010. To increase the number of tourists, major financial investments are needed to alter and modernize the way audiences are welcomed, to finance educational activities, and to offer major and attractive events (*e.g.* "blockbuster" exhibitions). In 2015, for example, the City of Paris committed 100 million euros to the modernization of the capital's municipal museums.

The second is a polarization around "star" museums (Frey, 1998), creating a kind of a two-tier system. The seven largest national French museums (owned by the State) receive more than 40% of all visitors. Museums with less than 100,000 visitors per year, on the other hand, have seen their attendance decline, according to the French Ministry of Culture (Patrimostat, 2016). The Louvre Museum is the most visited museum in the world with 10 million visitors a year, 70% of whom are foreigners (source: The Louvre Museum), followed, quite distantly, by the Pompidou Center (3.3 million visitors) and the Musée d'Orsay (same attendance). The cumulative attendance of the main Parisian museums represents more than 30 million people, *i.e.*, half of all museum visitors in France. In this context, it is important to mention that France has more than 1,000 accredited museums (*i.e.*, benefiting from the name "Musée de France", potentially applicable to any type of museum, public or private, national or local).

Finally, as in many countries, economic difficulties and public policy priorities are leading to stagnation or even a decrease in museum subsidies, which will even more be the case with the Covid-19 crisis. The majority of museum funding remains public in France, as in many continental European countries. Earned revenues (entrance fees, restaurants, shops, space rental, donations, and sponsorship) rarely represent more than 20% of the total budget. However, current funding is struggling to keep pace with needs and demands vis-à-vis the museums themselves and the public they serve.

Generally speaking, French museums have undergone profound transformations in the last thirty years (Mairesse, 2010). On the one hand, the Museum industry has witnessed a significant modernization. Indeed, many establishments have been renovated, others have been created, and most have been endowed with new functionalities: visitor services, promotion strategies, extended shops, and auditoriums (Eidelman, 2017). On the other hand, the major museums have undergone significant organizational changes, leading to greater decision-making autonomy, whether in budgetary or human resources management terms (Tobelem, 2017a; Regourd, 2018). This has created conditions for an increase in earned income, mainly from ticketing (with a significant rise in admission prices), but also from ancillary revenues (shops, restaurants, space rental, travelling exhibitions, and brand policy) and sponsorship (mainly from companies, but also from foundations and individuals).

Finally, attendance at the largest establishments has benefited from a steady increase in international tourist arrivals, representing an increase of several million tourists in a few years. To accompany these transformations, museums have hired professionals with more specialized profiles, whether in the field of audiences (mediation/interpretation, outreach activities, and communication), collections (registrars, project managers, conservators) or management (promotion and marketing managers, and fundraising specialists).

Significant investments have been made to create major new establishments (*e.g.*, Pompidou-Metz, Louvre-Lens, MuCEM in Marseille, and Musée des Confluences in Lyon), with architecture that tends to be demonstrative and flamboyant seen as a tool to promote urban tourism, following the example of the Guggenheim Museum in Bilbao, Spain (Regourd, 2012; Gravari-Barbas, Renard-Delautre, 2015; Labadi, 2016).

2.4. The future of museums

The first research on the future of museums was initiated in the 1970s (Finlay, 1977). But it was not followed by further research for a long time thereafter. A renewed interest was noted around 2010 due both to an increasing need for resources (to cope with an influx of visitors) and a decrease in public funding, which still accounts for the majority of museums' finance (Black, 2012). Research has shed light on the new relationships and interconnections between the public and the community on the one hand, and museums on the other (Newell et al., 2016). There are also many national scale initiatives which are noteworthy. The first such initiatives appear to have been initiated in the USA, with the formation of the Center for the Future of Museums. This has been supported by the American Alliance of Museums. Other professional associations such as the Museum Association in the UK have presented some evidence regarding what the future could hold in 2020. Similar works can be found at a national level in Switzerland and the Netherlands.

The report of the Dutch Museum Association, Agenda 2026. Study on the Future of the Dutch Museum Sector (2010), includes the following methodological information : "Agenda 2026 is an exercise in reflection, a sharing of collective wisdom and an outline of what can be seen approaching from afar. It is also an invitation to join the debate, particularly about the potential ramifications and the conclusions that can be drawn. This document has been produced with the co-operation of a variety of people and organisations ".

"These adjustments resulted in the six trends central to Agenda 2026 are: 1. Retirement of baby boomers; 2. Growth of international cultural tourism; 3. Cuts in subsidies; 4. Development of the Randstad metropolitan area; 5. Digitised society; 6. Greater European influence."

The Center for the Future of Museums in the USA has dedicated several annual volumes (TrendsWatch) to the analysis of major factors trends that may affect the future of museums, delineated here based on the year in which different reports were published:

- 2012: participatory approaches; population aging.
- 2013: 3D printers and the Internet of Things; the rebirth of cities.
- 2014: big data; the sharing economy; robotization.
- 2015: personalization and open data; the rise of ethical concerns.
- 2016: virtual reality and augmented reality; the question of representation and identities.
- 2017: the development of artificial intelligence; the role of migration and refugees.
- 2018: four scenarios for the future of museums up to 2040. The first scenario envisages a bright future corresponding to the optimal situation desired by museum professionals; the second scenario evokes a bleak future corresponding to the worst fears of museum professionals; the third scenario, known as "balanced", corresponds to the continuation of the trends currently at work; and finally, the fourth scenario refers to a disruptive situation, resulting from trends that are unlikely but that would have significant deleterious consequences if they materialize (In this case, a more entrepreneurial vision affecting the museum).

The methods used for foresight studies vary from one report to another. With regard to the various Trendswatch reports. Center for the future of museums (2012–2019), of the American Alliance of Museums (AAM), here is how the 2018 edition presents the scenario building process: "The plot lines and story elements of these scenarios were developed through many conversations with people working in and around museums, as well as adjacent sectors."

The British Museums Association's report, "Museums 2020, Discussion-paper. (UK) Museums Association, 2012″, does not include

any indication of the method. However, it is accompanied by an extensive bibliography.

Concerning the Swiss case, "*Reflection points of the Association of Swiss Museums, 2016*", does not contain any indication of a precise method beyond the identification of major trends and a reflection on their impact on museums. However, it is accompanied by a short bibliography (Quels musées voulons-nous demain ?, 2016).

We found one reference in relation to the future of French museums, led by the French Ministry of Culture in 2017 (Eidelman, 2017). It was written in 2017 and this is the result of brainstorming from experts after a series of workshops all around France with employees of a large panel of museums. The authors interviewed around 700 people but failed to provide any elements of the method. It is organized around four themes: ethics and the museum, the diversity of the audience and its impacts on the museums, a more creative and efficient museum, the economic development of the area where the museum is located. More than a foresight study, it, therefore, emphasizes the current problems museums are facing today.

In summary, the various foresight reports by several museums associations (and none by academics) seem to rely mainly on the extrapolation of trends and are based on documentary research, interviews with professionals (and sometimes experts from outside the museum field), and on brainstorming sessions. As such, they offer no scientific guarantee, either in terms of the representativeness of the experts questioned, or in methodological terms, or in academic terms (without the use of peer review or Delphi-type prospective research methods).

3. Methods

3.1. Delphi

Developed in the 1950s by Norman Dalkey and Olaf Helmer to organize the opinions of experts in the field of military foresight, the Delphi method has since been used in a wide variety of fields due to its flexible nature (Landeta, 2006). It aims to collect and organize expert judgments through iterative processes based on successive questionnaires (Linstone and Turoff, 1975).

Delphi can be used as a decision-making tool, to explore a subject, build a model, or make forecasts. It is also used in the construction of foresight scenarios (Ribeiro and Quintinilla, 2015). Over time, successive revisions have improved the method to question its relevance to changing social contexts (Woundenberg, 1991), and to incorporate technological innovations, such as the possibility and viability of online interviews (Gnatzy et al., 2011). In the context of foresight, the method allows to obtain a consensus of expert opinion on a future considered probable (Jiang et al., 2017). This method is considered more robust than the use of random groups (Parente and Anderson-Parente, 2011). Importantly, the questionnaire must be sent anonymously. In terms of sample size, usually the number of experts does not exceed 50 and the return rate is often low (Fösterand al., 2014), although this is not the case here. The high return rate in the context of this study is due to two factors: the familiarity of one of the authors with the museum sector, which allowed to identify reliable interlocutors and gave credibility to the approach[6]; and the *intuitu personae* knowledge of a number of experts solicited, which encouraged their willingness to respond to the survey.

Best (1974) noted that the opportunity to express opposing opinions enhances the quality of results emanating from Delphi. We therefore allowed the opinions of experts to be expressed in open-ended sections of the questionnaire. Some experts used this opportunity to express a contrary opinion. This proved useful in building an "alternative" scenario.

The identification of a breakthrough scenario could have prompted us to use dissensus based (Melander et al., 2019) or disaggregated Delphi approaches (Tapio, 2002; Tapio et al., 2011) instead of the classical consensus use of Delphi (Steinert, 2009). Indeed, these approaches make it possible to explore alternative futures (Tapio, 2002) through the analysis of divergent ideas, views and, positions about the future (Melander et al., 2019). These approaches, whose origins go back a long way (Turoff, 1970), have been widely adopted by researchers (Steiner, 2009) to analyze different sectors such as industry (Culot et al., 2020), transport (Melander et al., 2019) or automotive (Warth et al., 2013). They are part of the Policy Delphi stream (Turoff and Hiltz, 1996) which seeks to generate "the strongest possible opposing views on the potential resolution of a major policy issue" (Turoff, 1975, p. 80). Therefore, they used cluster analysis that aggregates the views of different stakeholders or groups of interest in order to produce scenarios that would be relevant to decision-making (Tapio, 2002; Warth et al., 2013).

Our study does not fall within a decision-making view but rather within the traditional vision of the Trend Delphi (Parente and Aderson-Parente, 2011; Turoff and Hiltz, 1996) with an exploratory aim. Since so far no foresight study has explored the future of French museums, the use of the classical Delphi appeared more relevant to reach the consensus of the key players in the system.

Our goal is to clarify their common representations of the future in order to draw the trend scenarios as they perceive them. However, we also wanted to highlight what they do not imagine but which may happen through a breakthrough scenario, in order to widen the future alternatives (Godet et al., 2006). For that reason, we used trends rejected by the experts to describe the breakthrough scenario.

3.2. Delphi construction

The first step of the Delphi construction is the formulation of the Delphi projections. We rely on the work of Fritschy and Spinler (2019) who underlined that the researchers should follow 3 steps: "That includes data collection, formulation of an initial set of projections, pretesting".

The data collection was selected for inclusion following analysis of the salient literature and preliminary interviews with scholars active in the museum field.

The construction of the key variables selected for the questionnaire was done in a traditional way.

All the materials available were coded, which allowed us to identify 7 different categories (demography, tourism, technology, governance, strategy and management, law and regulation).

The questionnaire was pre-tested by three experts in the cultural field, *i.e.* academics familiar with the issue of French museums, who were subsequently excluded from the study to avoid any bias. Given our field of study, a large number of experts had to be selected because the museum industry is characterized by a great diversity in terms of the nature of collections, location, legal status, budget size, staff, number of visitors, and percentage of foreign tourists.

The choice of experts follows the recommendations of Linstone and Turoff (2002) and Liimatainen et al. (2014). The experts belong both to the most prestigious museums, but also to smaller museums; they also include journalists, consultants, and academics. A list of 255 names was initially drawn up and the experts were contacted directly by the authors. 99 experts responded to the first round in the fall of 2017, representing a return rate of 38.8%. The experts who completed qualitative elements were interviewed at the end of the first Delphi round. 14 experts agreed to be interviewed to complement their qualitative

[6] One of the authors is an academic who has specialized for more than 20 years in the study of museums, the arts and culture. For the past 15 years he has taught at the École du Louvre (Paris). He is a member of the International Council of Museums (ICOM) and was previously a member of the board of the international committee dealing with management issues (INTERCOM). He is also an editorial board member for the Museum Management and Curatorship journal.

Table 1
Results by categories.

Round 1	Demography & change	Tourism	Economy & finance	Technology	Governance	Strategy & management	Law & regulations
Mean	3646	3727	3627	3486	3857	3883	3607
SD	1041	2119	0,926	0,984	1129	0,929	0,903
% agreement among experts	68,35	68,68	59,52	54,79	71,12	74,41	57,07
Round 2							
Mean	3911	3542	4036	4189	3903	4037	Not supported
SD	0,888	1007	0,951	0,817	0,931	0,847	Not supported
% agreement among experts	70,88	57,32	79,72	86,07	71,14	80,77	Not supported
Differences by round and by categories (%)							
Mean	26,52	−18,54	40,90	70,30	4,62	15,39	N/A
SD	−15,29	−111,21	2,52	−16,72	−19,84	−8,22	N/A
% agreement among experts	2,53	−11,36	20,09	31,28	0,01	6,36	N/A

Table 2
Summary of the key variables supported after round 2.

Key Variables	Mean	Standard Deviation
Greater cultural diversity	4,35	0,82
Greater social diversity	4,04	0,91
More management autonomy for the museum	4,24	0,88
More evaluation of results	4,11	0,83
More contractualization	4,25	0,78
More partnerships and cooperation	4,52	0,68
The creation of spaces reserved for children	4,27	0,71
The development of fun activities in the museum	4,10	0,78
Interactive tools, augmented reality, immersive devices	4,19	0,82
Flows of visitors from Asia and the Pacific (China, Japan, India, Korea, Australia…)	4,19	1,06
Developing relationships with schools	4,34	0,75
Developing relationships with universities	4,25	0,87
Putting the collections online	4,61	0,67
Putting educational content online	4,51	0,81
Collaboration with the health-social sector	4,05	0,80
Participation in social cohesion programmes (urban policy, relations with suburbs…).	4,41	0,71
Relations with the underpriviledged or those in the social field	4,33	0,80
Departmental councils	4,06	0,94
The central government	4,32	1,03
Crowdfunding	4,11	0,89
People in charge of earned income (shop, restaurant, space rental…)	4,43	0,61
People in charge of sponsorship and fundraising	4,42	0,69
Marketing, promotion and communication managers	4,14	0,76
Social Networks managers	4,33	0,69
Partnerships between museums	4,56	0,64
Partnerships with other cultural institutions	4,24	0,79
The increase of cultural tourism	4,18	0,87
The increase in the number of foreign tourists	4,10	0,83
The role of museums in the attractiveness policies of cities	4,15	0,92
The role of museums in regional development policies	4,15	0,89
Strategic planning	4,35	0,72
The evaluation process	4,25	0,74
Audience research / Visitor studies	4,28	0,73
Performance criteria	4,08	0,78

answers. This helped us to clarify the contours of the breakthrough scenario but also to give us some context. We used quotes from experts to show the limits or disadvantages of implementing the three scenarios. The interviews were recorded and, following up on the recommendations of a qualitative study (Langley, 1999; Pauget, 2006).

The second Delphi round was launched in January-February 2018. 79 experts replied in this second round *i.e.*, 79.8% of the experts who replied in the first round and 31% of the people who were initially contacted. During the Delphi exercise, no significant events changed the experts' judgment: no budget reductions were noted during this period; attendance was marginally higher, which at least partly represents a rebound following the attacks on France in 2015 and 2016. Finally, a feedback seminar was held in Paris in March 2018 to present the results to the experts and gather their opinions, comments, and reactions.

3.3. Overview of respondents

The average age was over 50 years and 38% of respondents were between 50 and 59 years. This was expected because experts have positions of responsibility that are not traditionally entrusted to young professionals. Thus, under-representation of young people in the sample was expected *a priori* (<7% of respondents were under 35 years of age). People over 60 years of age accounted for 26% of the sample: they are therefore very experienced respondents.

Museum directors and non-managerial curators represent around 39% and 12% of our sample, respectively. Next, 11% held administrative or public positions, whilst 3% were communication managers. In total, people working in museums represent 66% of the total respondents. Representatives of supervisory authorities at local or ministerial level accounted for 19% of the sample. The remainder comprised academics, journalists, consultants, and people responsible for philanthropy and fundraising.

The experts of the second-round were 79 in total. The average age is 50. The experts over 60 years old represent 22% of the sample. Museum directors represent 44.3% of the total. 21.5% are working in a museum. In total, 65.8% are working for a museum which is stable in comparison with round 1.

15% of the experts work for tourism institutions or for the French Ministry. The rest of the sample (19%) is made up of academics, journalists, bloggers…

The characteristics of the sample vary, but in proportion that remains quite stable.

As indicated earlier, the sample includes people working for major world-class institutions: the Louvre Museum, the Musée d'Orsay, the château de Versailles, the Picasso Museum, and the Pompidou Center. This was necessary and important given the number of visitors who seek out these national museums located in Paris or the Parisian area, as well as the prestige and reputation of these institutions on an international scale.

The main museums in other major French cities were also included in the study, namely museums in Bordeaux, Lyon, Lille, Nancy, Rouen, and Strasbourg (important French metropolises). This is consistent with the geographical diversity of museums in France.

Finally, smaller museums with a local audience represent 4.5% of the sample for theround 1 and 4% for the round 2.

The experts interviewed work in all types of museums, *e.g.*, museums of art, history, archaeology, ethnography, science and technology, modern and contemporary art, and natural history. This ensures that there is no bias related to the over-representation of certain types of museums.

Table 3
Summary of the elements involved in scenario 1.

Main elements (Scenario 1)	Mean	Standard deviation
*What constraints do museums face **in 2030**?*		
Increase the development of relationships with primary and secondary schools	4,34	0,79
Increase the development of relationships with members of the public who have hitherto been prevented from coming to the museum	4,32	0.79
Increase the development of relationships with universities	4,25	0,86
Increase partnerships with other cultural institutions	4,24	0,78
Greater social diversity of audiences	4,35	0,81
How do they want to achieve this?		
Online publication of collections	4,6	0,66
Putting educational content online	4,5	0,81
Participation in social cohesion programs	4,4	0,7
The creation of spaces reserved for children	4,26	0,71
Opening of governance with more autonomy for the museum in the choice of its partners	4,24	0,88
What actions are being implemented?		
Recruitment or promotion of managers responsible for the development of own resources (shop, restaurant, space rental, sponsorship and fundraising managers)	4,43	0,61
Interactive tools, augmented reality, immersive devices	4,18	0,81
Social Networks	**4,32**	**0, 79**

Table 4
Summary of the elements involved in scenario 2.

Main elements (Scenario 2)	Mean	Standard deviation
*What constraints do museums face **in 2030**?*		
Witnessing an increase in the number of Asian tourists	4,18	1,06
Accept a decline in the role of curators, a decrease in subsidies, particularly from the French State.	4,31	1,03
Responding to demand to participate even more in the attractiveness of the territory	4,17	0,87
How do they want to achieve this?		
Implementation of specific activities responding to a greater diversity of audiences.	4,1	0,7
Crowdfunding	4,1	0,89
Increase the museum's own resources and investment in support functions (marketing, communication)	4,13	0,76
What actions are being implemented?		
Performance management, evaluation, managerial techniques, cost reduction, and management control.	Performance 4,07 Costs control: 4,11 Management control: 4,05	Performance 0,78 Costs control: 1,07 Management control: 0,86

Table 5
Summary of the elements involved in scenario 3.

Main elements (Scenario 3)	Mean	Standard deviation
What constraints do museums face?		
Reduction of tourist flows because of crises and terrorism	3,13	0,95
Decrease in international visitors except those from Africa	2,98	0,91
How do they want to achieve this?		
Organizational and structural changes such as the outsourcing of welcome and information functions	2,97	1,24
Local stimuli	3,37	0,97
What actions are being implemented?		
Automation and robotization (replacement of security and mediation staff)	2,85	1,07
Selling artworks of the museum collection	2,37	1,07

3.4. The Delphi questionnaire

Following a discussion of the questions between the authors of the article, the various variables – 44 in total – were classified into 7 main themes.

The themes were used as a benchmark in structuring scenarios in the face of the great diversity of variables. This is due to the fact that Delphi is sectorial and museums are undergoing profound changes in all directions. The questions asked required answers from the experts using a Likert scale (from 1 “strongly disagree” to 5 “strongly agree”). A series of open-ended questions (inviting respondents to submit comments) completed the questionnaire. Finally, we submitted the questionnaire for validation to external experts, as mentioned above, and this led to detailed corrections for reasons of clarity and understanding.

3.5. Choice of themes for round 2

In a recent article (Apreda et al., 2019), it was demonstrated that there were variations in the results depending on the method chosen for the transition from round 1 to round 2. The transition from round 1 to round 2 was thus carried out according to the recommendations of Landeta (2006) based on the following criteria:

- A percentage increase in the number of agreements between experts. This is calculated on the basis of responses receiving 4 or more on the Likert scale. This is the measure of consensus among experts.
- An increase in the mean and a decrease in the standard deviation. This is based on a calculation of Cohen's Kappa used to measure the degree of agreement between the experts. It is given by the following equation:

$$K = \frac{Pr(a) - Pr(e)}{1 - Pr(e)}$$

Where K is Cohen's Kappa, Pr(a) refers to a relationship agreement, and Pr(e) to a random agreement. The purpose is to calculate the percentage of agreement between the authors of a study. It seeks to eliminate the effects of chance to objectify the choice to retain one variable over another. We follow the interpretation of Landis and Koch (1977) whereby the results are interpretable on a scale from zero to one. One refers to a perfect agreement and zero to a perfect disagreement. Usually, the extent of agreement is considered good if it is above 0.6. The results herein show a very good agreement (0.70) between the authors in the first round. In the second round, the agreement between the authors increased to 0.85, an even stronger level of agreement. Overall, the rate of agreement among experts increased between rounds 1 and 2. The average also increased slightly and the standard deviation decreased slightly. This justified the abandonment of a possible third round and the construction of scenarios.

4. Results

4.1. Description of the results

The first issue was to understand the role of museums in 2030. While a legal definition existed, it was not clear that this definition was shared by all the museums. It was not obvious indeed that despite their statutes if the Louvre Museum (9.6 million visitors per year in 2019) and a museum attracting 50,000 people had something in common. Indeed, the Louvre is an international museum brand while small museums such as the musée Dauphinois have a local influence (84,000 visitors/year, coming mainly from the district). Indeed, our results show that they have a common view of what is a museum.

Museums can be framed in terms of six missions (Knel et al., 2014). They are responsible for the preservation and transmission of cultural heritage, as well as education about cultural heritage. In addition, a museum is a place of exchange and where people come for esthetic, educational, or knowledge reasons. A clarification of the most important missions by 2030 was therefore necessary.

The most important missions for the experts are the educational issues and the democratization of the culture (for round 2, mean: 4.63 and SD established at 0.53).

The presentation made here gives an overall idea of the results by showing the average, the S.D. and the percentage of agreement between the experts. In addition, we made a percentage comparison between the two rounds. An overall improvement is observed in the average, with more agreements between experts and less standard deviation. This is due both to the improvement of the consensus and to the reduction in the number of items that no longer caused dissension among the experts.

The main classes of validated trends tend to revolve around technology, governance management and collaboration with various institutions, internal management of museums, and their financing.

The experts agreed on the collaboration with various institutions but had mixed emotions and were reluctant to include all the key variables regarding the participation of the audience for temporary or permanent exhibitions for instance. Funding is likely to decrease say the experts and the demand for more transparency, efficient management, and cost control. However, the experts think that the recruitment of new professionals, especially to strengthen the relationship with their online audiences, is likely to happen. We should note the minor role of technology (only one variable was selected for round 2) is validated only for the online publication of collections after digitization.

On the other hand, the demographics, which had been validated in round 1, did not achieve consensus despite an improvement in the mean, standard deviation, and percentage of agreement among experts (the experts acknowledge a greater social and cultural diversity of the audience, but not a greater intergenerational or diversity in terms of income). The variables describing visitors by 2030 show a deterioration in results between rounds 1 and 2 (with a decrease on average of 10%, a collapse in the standard deviation and a decrease in the percentage of agreement between experts, *i.e.*, −11%). This may be explained by the percentage differences between respondents between rounds 1 and 2 (with a decrease in response of almost 20%). The experts agreed that visitors from Asia (Japan, China, India, and Korea…) are likely to rise, while they disagree with an increasing number of visitors from Africa and remain almost neutral for the other incoming destinations. In contrast, laws and regulations should not play a key role in the next decade, according to them.

4.2. Scenario construction

We follow on Jiang et al. (2017), who build their scenario on both "aggregated means of our experts' quantitative assessments, while also using their qualitative arguments for further illustration and verification".

From this, we constructed two trend scenarios and a breakthrough scenario. The two trend scenarios are based on the most consensual variables in terms of Mean, Standard Deviation, and percentage of agreement among experts from round 2.

The first scenario proposes the deepening of the educational and social mission. It includes a closer collaboration with other institutions such as schools and universities. It relies on relations with various partners from the public sector. Newly recruited specialists will implement technologies such as digital technologies and interactive tools to foster the educational and social mission.

The second scenario is a little less supported by the experts. It is based on the idea that financial constraints will increase and that museums will have to adapt. A development of their resources, through specific activities, could occur.

Conversely, the breakthrough scenario is based on the trends rejected by the experts. In particular, it describes a reduction in tourist flows (which experts do not think will become manifest in practice, with the exception of African tourism flows, which are currently marginal), combined with a steady national and international economic decline. Conversely, local visitors will continue to engage with museums. Collaboration with other sectors such as health is encouraged to try to compensate for the deterioration of government funding and other types of funding (*e.g.*, crowdfunding).

4.3. Trend scenarios

Both trend scenarios follow the recommendations of classical studies using the Delphi method. These scenarios are based on a consensus among experts. How do they consensually express the future up to 2030?

4.3.1. Scenario 1: deepening of the educational and social mission

The scenario that brings together the most consensual variables is centered on education/educational missions in collaboration with various salient public institutions, including other museums in the community. It is a vision of the democratization of culture and a greater diversity of the audience. In this context, museums are autonomous cooperative institutions oriented around their socio-educational role. As quoted by expert number 10, "The educational role of museums will have to be rethought (particularly in its pedagogy, leaving more space for collaborative actions)". To fulfill these educational missions, the museum will accelerate the online availability of collections and educational content, and develop its relationships with schools and universities (including through social networks), promote spaces dedicated to children, and sometimes use new technologies (interactive tools,

augmented reality, and immersive devices) .[7]

At the same time, the museum will evolve towards a greater awareness of its social dimension by participating in social inclusion actions, improving its relationships with non familiar audiences and developing links with the socio-health sector. Museums will have to cooperate with each other and with other cultural institutions. In this way, we obtain a holistic vision of the museum, confident in its strengths and seeking to mesh with other public institutions within a well-defined governance framework. It is the idea of "growing the public sector". Moving beyond stakeholders in the broad sense, selected cooperative pursuits are preferred. This does not involve mergers between institutions but rather specific cooperation with other institutions (public and preferably cultural). In this context, the public (*i.e.*, visitors) is not directly involved in strategic decision-making processes but can contribute to the choice of certain programs. In this scenario, the technological aspect appears to be subordinate but nevertheless has an important role in terms of ensuring better mediation with the public. The virtual museum is only one of numerous possibilities to improve the accessibility of works to a young audience. Finally, particular attention is paid to underpriviledged groups (and handicapped people, wether physical or mental), who were hitherto hindered from visiting museums in large numbers. The accessibility of the museums is a major concern from a "democratization" point of view.

4.3.2. Scenario 2: a managerial and development perspective to address severe budgetary constraints

In this predominantly economic and financial scenario, and despite the rise of crowdfunding, museums are subject to decreased subsidies, not only from the central government, but also from regional and local authorities. This creates a tension because financing needs are being jeopardized. It directs museums' activities towards a stronger anchoring in their local ecosystems, by actively participating in the city's territorial development policies.

The museum thus seeks to integrate more fully into its community (*e.g.*, use of space for local events, provision of auditoriums for local associations…). The strong pressure on funding means that results are more closely controlled by supervisors and that, in terms of management, the emphasis is on control, cost reduction, and the monitoring of performance indicators. Regular audits are organized by supervisory authorities, which are more involved in evaluation procedures and less in supporting the development of new activities. The museum also seeks to develop its own resources, not least in terms of the development of commercial potential (*e.g.*, gift shops, coffee shops, and eateries), even though this potential is necessarily limited for smaller institutions.

To deal with budgetary issues, a twofold movement is launched. On the one hand this involves the outsourcing of activities (*e.g.*, maintenance, IT, security, and mediation). On the other hand, the museum is placing greater emphasis on promotion, communication, and marketing actions, with the help of specialists in these activities. The respondent number 13 summarizes this: " It also questions on how to reach the national public; it supposes communication and tourism campaign; we must produce more and more widely disseminated content (*e.g.* conferences) to reach people who do not come to the museum". In a context of growing cultural practices, the museum configures its activities depending on the socioeconomic and demographic characteristics of its (current and potential) visitor base. For example, specific activities are planned for tourists, especially from Asia, as part of territorial development. Making the museum and its activities "known" becomes essential in this perspective and continuous investment is made in establishing, maintaining, and stimulating social networks.

4.3.3. Scenario 3: a reinvention of the museum around the emergence of hybrid equipment and a participatory approach involving new governance characteristics

The breakthrough scenario broadens the range of possible futures and highlights what experts do not imagine but which may eventually happen.

In this scenario, the ongoing and worsening economic crisis (which resonates unexpectedly with the current crisis), combined with the fear of terrorism, leads to a sharp reduction in tourist flows. The exception here is that tourist flows from African countries have increased (which is consistent with the fact that Africa will become shortly the most populated continent).

In order to cope with the decline in attendance and the drastic reduction in public subsidies, museums are obliged to rent and sell works of art, and share the purchase of collections. As quoted by respondent 8, this is a counterintuitive vision of the missions of the museums that presupposes a radical change: "Because selling works is nonsense that goes against the whole logic of building [public] collections."

The French model of development, so far mainly funded by the government (both local and national) has now emulated many elements of the Anglo-Saxon model.

In a second step, outsourcing or even automating key activities such as welcoming, education, and public information are adopted. The audience, which is characterized by a higher level of education, is more strongly involved in the preparation of permanent and temporary exhibitions. The respondent number 9 summarized this perspective: "A living and accessible museum must be: a cultural tool intended primarily for the inhabitants of its territory and whose "resident participation" is essential in the work of collecting and restoring heritage identities; a tourist development tool that contributes to the dynamism and influence of this same territory". In this direction, the respondent number 9 stated: "By 2030, this role (of the museum) will certainly be further strengthened: to develop the territory, but also and above all to be a factor of social cohesion, a place for debate."

The public is also involved in the governance by participating in the very definition of the museum's project. The museum has to develop spin-off activities, such as the organization of birthday parties for children, in order to limit cash flow problems.

Technological investment is made in automated security activities. Following the massive drop in subsidies not compensated by patronage and crowdfunding, the museum no longer has the means to invest in other technologies.

Faced with these elements, museums are thus betting on closer ties with the public and other sectors such as the healthcare sector by investing, for example with other public institutions in art therapy.

Local stimuli lead the museum to reinvent itself by developing activities related to the collaborative economy and the "buy local" trend. As highlighted by respondent number 5, this scenario could lead to a greater paradox for the key actors of the sector: "The museum must increasingly navigate between two dangers; that of citizen involvement (with its possible drifts such as the monopolization of an interest group in institutional governance), and that of additional private funding (with the potential instrumentalization of the museum for corporate purposes)".

These different scenarios suggest that a consensus exists among the experts interviewed to the extent that they could collectively conceive a relatively predictable future for museums. Museums could feel compelled to deepen their educational and social mission, in line with a "classical" vision of this type of institution. This corresponds to the demands of public decision-makers in terms of proximity, democratization, and social inclusion as well as the philanthropic orientations of the private sector.

Alternatively, in the case of an even greater pressure on government

[7] The respondent 11 synthetizes the perspective on technology: "It seems difficult to imagine that technological developments will diminish in the years to come. The prospects opened up by Big Data will necessarily impact the functioning of museums and certainly in a positive way, about the digitization and therefore the dissemination of collections."

funding, museums could be inclined to develop partnerships with other stakeholders in the territory (particularly with the tourism sector), to develop their managerial capacities, and to become more involved in attractiveness initiatives (through events and the development of promotional actions).

In other words, museums may try to become increasingly self-sufficient through the development of their own resources and the continuous increase in international tourist flows. However, this may be possible for "star" museums (*e.g.* The Louvre Museum, the New York Metropolitan Museum of Art, the Hermitage in Saint-Petersburg, the British Museum, MoMA, Château de Versailles, and Vatican museums), but the experts interviewed do not believe that these models of continuous growth can be transposed to institutions with a lesser reputation and more limited human and financial resources.

Our results therefore invite us to put into perspective the relevance and the feasibility of implementing radically new business models. The interviewees seem to be anticipating the end to the Gilded Age of museums (with much involuntary anticipation of the Covid-19 crisis) and a necessary adaptation to a less favorable context due to less support from public authorities on the one hand and no easy options in terms of alternative funding streams on the other hand.

5. Conclusion

French museums are among the most important in the world. Their *modus operandi* is quite similar to that of museums around the world (Europe – including Scandinavian countries; Asia – including Japan, Korea and China; Africa, the Middle East, and South America), with the exception of Anglo-Saxon countries Tobelem, 2017a). However, visitors are disproportionately attracted to the largest museums and those museums seem to be reaching their limits in terms of development. How will they evolve by 2030? To answer this question, we interviewed 99 experts using a Delphi method. These experts were representative of the sector, both in terms of the type and size of museums, geographical origin, and legal status.

The experts' answers allowed us to develop three scenarios. The first is centered on youth and the democratization of culture. The second is based on economic considerations and is concerned with the capacity of museums to become more sustainable in the context of diminished government support. These first two scenarios ultimately appear as extensions of what the experts are currently experiencing, in a classic prospective vision of "curve extension". Thus, they do not imagine truly innovative scenarios. Two explanations can be put forward in this respect: on the one hand, the strong financial constraints suffered by the professionals interviewed prevent them from projecting themselves into the future (*i.e.*, the bias of "presentism"); on the other hand, French professionals are not particularly familiar with foresight approaches, unlike their Scandinavian and Anglo-Saxon counterparts for example. Another explanation can be linked to the Delphi method, which seeks to establish convergence between experts and tends to force consensus (Godet et al., 2006).

However, we outline a possible third scenario, which would see museums reinventing themselves as a type of hybrid local institution, using the resources of museums (their collections and their expertise related to interpretation tools and outreach activities) to imagine institutions combining culture, health, social, collaborative economy, and the participation of inhabitants.

From a managerial perspective, the presentation of our results to French museum professionals could stimulate their projective capacities and encourage them to deepen their thinking in terms of foresight, pursuant to being as prepared as possible for future predominantly unexpected contingencies (*e.g.* the Covid-19 crisis). Nevertheless, there is ample scope for future research in this domain. Taking a pan-European approach could be particularly insightful vis-à-vis identifying where and how commonalities exist in terms of opportunities and threats. This could then provide the basis for cross-national interventions by policymakers and other salient stakeholders. From a cultural and creative industries (CCI) point of view, this study confirms that scholars must remain prudent (Mairesse et al., 2017) with the prospect of a greater integration of museums within this large sector, for it is dominated by a for-profit orientation (*e.g.* recorded music industry, movie industry, video games, advertising, design and fashion industry). Despite opportunities for an increase in their earned income and a greater collaboration with adjacent sectors (tourism, health, local development…), museums are basically not-for profit organizations, whose "raison d'être" is educational.

Author statement

Dr. Bertrand Pauget worked on the design of the article, the methodology and the writing of the article.

Dr. Jean-Michel Tobelem was in charge of selecting the experts and administration of the Delphi questionnaire and conducted qualitative interviews. He worked on the writing and editing of the article.

Dr. Jean-Philippe Bootz worked on the Delphi method, the writing and the editing of the article.

Supplementary materials

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